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3 May 1966

MEMORANDUM FOR: Assistant to the Deputy to the DCI for National Intelligence Programs Evaluation

SUBJECT: Questions from General Maxwell Taylor Concerning BLACK SHIELD Deployment

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A telephone call from [REDACTED] from [REDACTED]

Office this morning indicated that General Taylor is interested in answers to certain questions on BLACK SHIELD. I hope the attached papers will provide you with the answers General Taylor desires. We are prepared to furnish you any further information you desire.

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[REDACTED]
JACK C. LEDFORD
Brigadier General, USAF
Director of Special Activities

Attachments -
As stated

cc: D/R/CIA

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QUESTION: What will be the Chicom's reaction to sonic boom? Will the Chicom's be able to identify the BLACK SHIELD vehicle by the sonic boom signature?

ANSWER: The public will probably not distinguish between an occasional BLACK SHIELD supersonic boom and a boom generated by a Chicom supersonic aircraft. A sonic boom is associated with the shock waves generated by an aircraft during the supersonic portions of flight. Two of the most significant factors effecting the magnitude of the sonic boom overpressure are speed and altitude, i.e. higher speed and/or lower altitude result in greater overpressures. Of these two parameters, theory and limited flight data substantiate that the over-pressure is more sensitive to altitude changes than to speed changes. Consequently the lower flight altitudes of the Chicom supersonic aircraft should result in identifiably greater over-pressures than those generated by the BLACK SHIELD vehicle. However, unless the differences were large enough that one resulted in physical ground damage, i.e. broken windows, etc., whereas the other inflected no physical damage, it is doubtful that the general public would associate two different aircraft with the events.

The Chicom scientists may be able to correlate sufficient sonic boom over-pressure data over a period of time which would allow them to identify the presence of a BLACK SHIELD vehicle. However, their early warning radar net would undoubtedly be used for detection at considerably greater ranges than are capable with sonic boom

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detection devices. When a supersonic aircraft flies over or in the vicinity of a ground microphone recording station, two shock waves are usually noted. These are referred to as the bow wave and the tail wave and are generated from the nose and the tail of the aircraft. These appear at the ground measuring station as two momentary changes in the atmospheric pressure separated by a finite but small time interval. State-of-the-art recording devices are somewhat insensitive to the slowly varying pressure in between and any BLACK SHIELD sonic signature detected by the Chicom scientists would be categorized almost completely by the magnitude of the bow and tail pulses, the time interval, and the boom swath width. This signature may be different from that generated by the Chicom supersonic aircraft. However, this country and undoubtedly others, are involved in programs for more sophisticated methods and/or equipment to more precisely identify sonic signatures of the various sonic boom generating devices.

Sonic boom over-pressures of 1.2 to 1.7 pounds per square foot were measured under the BLACK SHIELD track at Mach numbers between 2.6 and 3.0 at altitudes from 63,000 feet to 79,500 feet. Fifteen nautical miles to the side of the aircraft track the over-pressure was reduced from 1.7 to 0.8 pounds per square foot and the boom was described as "very faint."

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QUESTION: What is the status of the runway at Kadena Air Base vis-a-vis a BLACK SHIELD deployment?

ANSWER: Because of the increase in air activity and utilization at Kadena Air Base in support of the war in North Viet Nam, together with future projected increases in traffic and utilization, the Air Force intends to undertake a small repair project on the now existing main runway and a major project to extend and reinforce the now existing short parallel runway. These projects have been programmed for Kadena for some time and are perfectly normal for any operating air base. There always exists a continuous renovating runway program for any air base very similar to that you find on automobile highways. The problem with the main runway at the present is that waves have developed along the main runway and the small project of three to four weeks duration is to smooth out the runway. The only effect this has on BLACK SHIELD is that we should take off with reduced fuel loads because of the harmonic motions setup within the aircraft due to the waves in the runway which could affect the more delicate instruments and electrical systems in the airplane under heavy load conditions. The question, however, is academic. We intend to take off with reduced fuel loads from Kadena regardless of the condition of the runway. There are many operational reasons for this which will be furnished in detail upon request.

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The exact timing of the three to four-week project on the main runway has been a matter of continuous coordination between OSA and General Geary's Office and the Air Staff ever since BLACK SHIELD became a possibility. The present plan is to start the main runway project on the first of June for completion not later than the first of July. This appeared to us to be the best time to accomplish this since we figured that if a decision had not been made to deploy BLACK SHIELD during the past six months up until the first of June, and considering the poor weather conditions in Southeast Asia during the month of June, we would, therefore, not likely deploy and this would provide the best time for fixing the runway. It has been agreed all along that if we do deploy prior to the first of June the Air Force will postpone the main runway repair. If no decision to deploy is forthcoming by the first of June the repair project will be initiated. In the event that a decision is made to deploy after the first of June the repair project can be stopped and the runway put into commission again in time to receive the first BLACK SHIELD aircraft under the BLACK SHIELD deployment timing.

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QUESTION: Does a Cover Plan exist for BLACK SHIELD?

ANSWER: Cover Plans exist both for the deployment and the operation phases of BLACK SHIELD. Dr. Flax has informed us that though the 303 Committee has approved both Cover Plans, the Operational Cover Plan is not to be distributed before such time as the Committee approves deployment; and this has been complied with. (See attached copies)

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EO/OSA / [Redacted] (3 May 66)

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